Intelligent International Marketing System and Marketing Method based on Big Data

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ABSTRACT

With the advent of the era of knowledge economy and the accelerated globalization of the international market, it has become an inevitable trend for Chinese enterprises to move towards the international market. However, due to congenital and acquired environmental factors, Chinese enterprises still have various problems in international marketing activities. So how to further develop their own living space and improve the competitiveness of enterprises is an urgent problem faced by all enterprises. Based on the background of big data, this paper studies and analyzes the international marketing system and marketing methods.

Keywords: International marketing; big data; Marketing system; Marketing methods

1. INTRODUCTION

At present, there are four kinds of foreign theories related to enterprise international marketing: international trade theory, foreign direct investment theory, multinational corporation theory and enterprise international development stage theory. The research object of international trade theory is the macro trade between countries. Its main purpose is to clarify the reasons for trade between different countries, and its foothold is countries rather than enterprises; The theory of foreign direct investment mainly studies the motivation, reasons and forms of enterprises' foreign direct investment and foreign production and operation. The scope of enterprise operation is quite wide. It is difficult to find a satisfactory answer in the theory of foreign direct investment on how to successfully carry out international operation; The theory of multinational corporations is based on the theory of international trade and foreign direct investment, and absorbs some ideas in modern management to form a relatively complete theoretical system.

Since 1978, with the rapid development of China's economy, China's economic ties with the international market have also been greatly strengthened. It has made great progress in commodity trade, the introduction of foreign technology and capital, the international operation of enterprises and international economic and technological cooperation. Based on the accumulation of a large number of business data, data users hope to quickly and conveniently extract the required information from a large number of mixed types of messy data, and know the enterprise decision-making. In order to meet these needs, data warehouse technology is established. Data warehouse system can reorganize a variety of mixed resources according to the needs of decision makers. However, the theoretical and practical research on the international operation of enterprises in China is relatively backward.

Moreover, most of the research on the international operation of enterprises by Chinese scholars is based on the international operation of multinational corporations, while the research on small and medium-sized enterprises is relatively lack, and the focus is on the internationalization strategy of small and medium-sized enterprises through export. Figure 1 below shows the processing flow of the data warehouse system.

This paper consists of the following parts. The first part introduces the relevant background and significance of this paper, the second part is the related work of this paper, and the third part is intelligent international marketing system based on big data. The fourth part is intelligent international marketing method based on big data. The fifth part is conclusion.
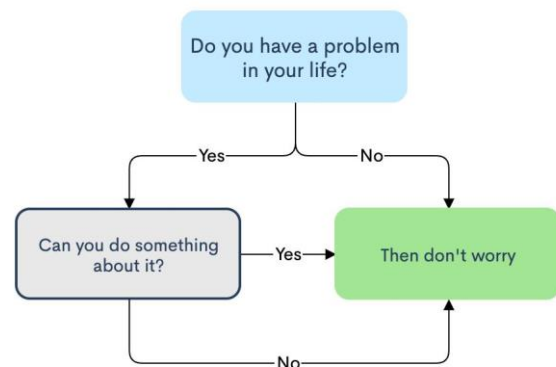

Figure 1 Data warehouse system processing flow

2. RELATED WORK

Zhang l proposed optimization of the marketing management system based on cloud computing and big data[1]. Liao s h et al. proposed big data analytics of social network marketing and personalized recommendations[2]. Lmd luca et al. proposed how and when do big data investments pay off, the role of marketing affordances and service innovation[3]. Liu x y proposed agricultural products intelligent marketing technology innovation in big data era - sciencedirect[4]. Zhao z et al. proposed aprocurement method in oil marketing company based on forecast model and expectation criterion[5]. Liao h et al. proposed research on the b2c online marketing effect based on the ls-svm algorithm and multimodel fusion[6]. Wu j et al. proposed evaluation of precision marketing effectiveness of community e-commerce–an aisas based model[7]. Arab m proposed providing an approach to predicting customer quality in e-commerce social networks based on big data and unsupervised learning method[8]. Tam p t et al. proposed data driven customer segmentation for vietnamese smes in big data era[9]. Wang c et al. proposed evolution of the internet's support for chinese enterprises' innovation based on big data[10].

2.1 Data characteristics of big data

The "data" of big data has the following four characteristics:
First, it is reflected in the amount of data. Big data not only needs to integrate massive historical data, but also needs to process dynamic data in real time. With the continuous development of business, the amount of data of various enterprises is growing and the growth rate is accelerating. Therefore, the huge amount also makes new requirements for the processing capacity of big data, including underlying hardware, storage Whether software can quickly and effectively deal with the increasing amount of data, only if its own ability is strong enough, can it still be comfortable in the face of the rapidly growing amount of data.
Second, it is reflected in the data type. Big data supports processing multiple types of data. In addition to effectively processing conventional data, it can also effectively identify and process unstructured data, such as articles, sounds, videos, pictures, etc. when processing unstructured data, we first need to turn them into structured data. Big data can handle such complex data types, which requires strong recognition and transformation ability, so as to transform complex information into valuable data.
Third, it is reflected in accuracy. Big data processing is a complex and delicate process. Although each link is relatively independent, the data is still interdependent. Once a problem occurs in one of the middle links, the final processing result will be greatly affected. Therefore, the whole big data processing process must be accurate.

Fourth, it is reflected in speed. Big data can analyze and process fast-growing and rapidly changing data, and calculate the results in a short time.

2.2 Big data analysis and mining technology

The analysis and mining technology of big data is mainly to deeply mine the data, and mine the potential valuable information in the data through diversified data analysis technology. This data analysis and mining technology is mainly through random sampling of data to reduce the data scale, further improve the efficiency of data analysis, mine more valuable data information, and provide reference for the final data analysis results. Data analysis and mining technology is still in the process of further optimization, and has also played an active role in more and more industries. It is the key development object of big data technology at present, which provides technical support for the value mining of big data and better optimization of analysis results.
The data mining process is divided into several steps. Generally speaking, there are five steps: data selection, data processing, algorithm selection, data mining and result analysis. Each step is interdependent and indispensable in the whole data mining process. The flow chart is shown in Figure 2:
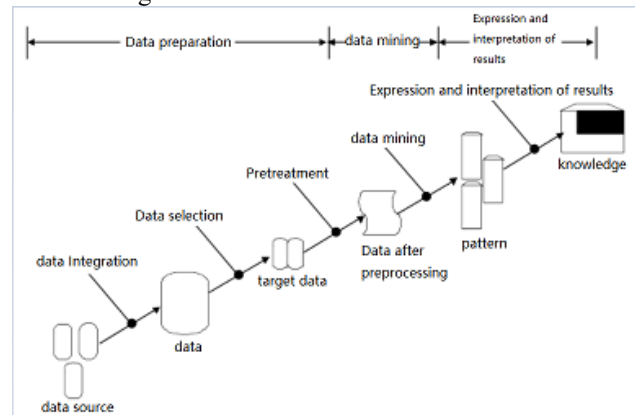

Figure 2 Data mining flow chart

3. INTELLIGENT INTERNATIONAL MARKETING SYSTEM BASED ON BIG DATA

3.1 Framework of intelligent international marketing system based on big data

The big data based intelligent international marketing system (KIMS) consists of three parts: financial subsystem, order subsystem and execution subsystem. The financial subsystem is composed of database, rule base, model base, inference engine and friendly user interface.

As shown in Figure 3, it provides users with a friendly and efficient interface for dialogue with the system and search decision-making financial support. Managers can manage sales activities and sales trends accordingly. Through the database, the order subsystem can not only serve the search of goods and the success of orders, but also provide timely information for the retrieval, analysis and reasoning of model base and rule base. The rule base stores all the necessary rules to support reasoning, and the reasoning engine is responsible for the realization of the reasoning chain. It uses the rules in the rule base and the data in the database to select appropriate rules to reason new knowledge or feasible schemes, and can select appropriate models to predict and analyze management problems. The model base uses classical management science, process research or financial and statistical models as analysis tools to analyze, predict and evaluate the value of various businesses. In the model base, this paper uses the artificial neural network model to predict the sales revenue and sales profit. Finally, implement subsystem management and maintenance of KIMS upgrade, data item insertion and security services.
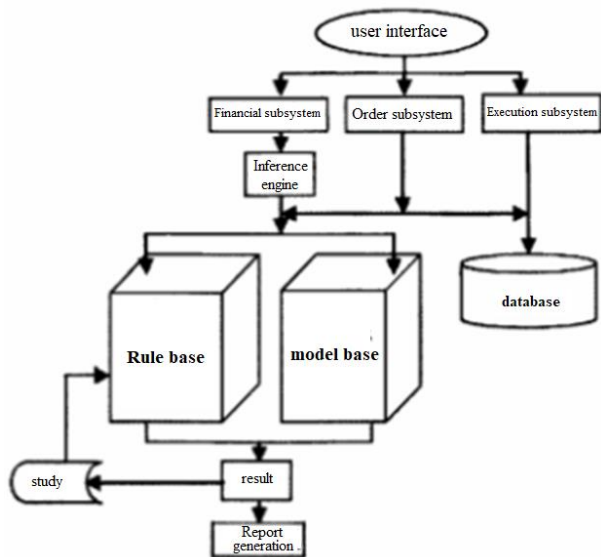

Figure 3 Intelligent international marketing system framework based on big data

3.2 Rule base

The knowledge base constructed in this paper contains rule base, so knowledge is a series of rules. Each rule specifies a contact or recommendation, which is described in the form of if (antecedent condition) then (backward clause). That is, as long as the antecedent condition is established, the backward clause is also true.

For general manufacturing companies, the enterprise value process generally includes three parts: raw material reservation and contract signing, production and sales. The enterprise database stores the price, order number, contract number, profit and other information of several historical years, and the enterprise's goal is to predict the sales volume, order, pricing The management of contract and product quality regulates the function, pricing and production quantity of products, maximizes the net profit of the enterprise, and tracks and forecasts the operation status of the enterprise.

4. INTELLIGENT INTERNATIONAL MARKETING METHOD BASED ON BIG DATA

4.1 Establish appropriate marketing channels

(1) Design channels. Good channels should meet the standards of economy, control and applicability.
(2) Choose a middleman. After designing the channel, the most important thing to establish the marketing channel is to choose the middleman. The quality of middlemen determines the overall quality of channels and affects channel efficiency.
(3) Develop channel agreements. It is better to sign a short-term distribution contract for one year, otherwise the middleman may use the long-term contract to engage in speculation. The terms of the contract should exert pressure on the middleman to be replaced at any time and urge it to make more efforts to make the enterprise's products.

4.2 Measures to encourage middlemen

(1) Understand middlemen. For middlemen. The first is the customer's purchasing agent, and then the manufacturer's sales agent. Manufacturers should stand in the position of middlemen and understand their needs and concerns in order to obtain the cooperation of middlemen.
(2) Correctly use channel power. When dealing with the relationship with middlemen, manufacturers can take different types of power forms: compulsory service power, reward power, legal power, expert power and calling power.
(3) Incentive mode. In cooperation with middlemen, various positive incentives are adopted, but sometimes sanctions such as reducing gross profit, slowing down delivery or terminating relationship are taken. The disadvantage of this method is that the manufacturer does not really understand the needs, problems, strengths and weaknesses of distributors.

4.3 Evaluate middlemen and improve channel system

(1) Evaluate middlemen. The manufacturer must regularly measure the performance of the middleman according to certain standards, such as the completion of sales quota, average inventory level, delivery time to customers, treatment of damaged and lost goods, and cooperation with the company's promotion and training plan. If the middleman is incompetent, the enterprise should suspend its cooperation.

(2) Improve the channel system. Create a new way to sell its products in all markets, and regularly improve the channel system to adapt to the new dynamics of the market. This improvement includes increasing or decreasing individual channel members, increasing or decreasing some specific market channels, etc.

4.4 Resolving channel conflicts

(1) Causes of channel conflict. The root of channel conflict is that manufacturers and middlemen belong to independent business entities, and their objectives and interests cannot be consistent.

(2) Handling conflict policies. Some conflicts are beyond the influence and control of the manufacturer, which is beyond the power of the enterprise. At this time, avoidance is a clever and effective approach. Small and medium-sized enterprises need to carefully choose the channel conflicts to deal with, and should not treat all channel conflicts equally.

(3) Improve channels in various ways. In the face of channel problems, enterprises and manufacturers often improve through channel adjustment. Most manufacturers manage channel conflicts by establishing common goals, strengthening channel cooperation, strengthening information communication, clarifying decision-making power and standardizing sales behavior.

5. CONCLUSION

With the advent of the era of economic globalization, it has become an inevitable trend for Chinese enterprises to enter the international market for international marketing. In this situation, how to further develop their own living space and improve the competitiveness of enterprises is an urgent problem faced by every Chinese enterprise. This paper designs a framework of intelligent marketing system, develops the prototype of the system, and has been verified. Through this system, customers can obtain cheap and high-quality product purchase services, while manufacturers can effectively realize product display, sales, cost-profit analysis and customer knowledge management. In order to optimize the system function, the

author introduces electronic map technology, GPS technology and so on. In the process of manufacturer's financial analysis and manager's decision support, the author borrows knowledge management and knowledge reasoning technology. In order to manage system performance, the author uses a layer of neural network to predict product sales and sales profit, so that manufacturers can grasp the future and improve their competitiveness through KIMS system.

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